



**PATENT APPLICATION**

PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

On Appeal from Group: 2853

Yoshinari MORIMOTO

Application No.: 10/625,778

Examiner: J. HUFFMAN

Filed: July 24, 2003

Docket No.: 116571

For: INK JET PRINTER IN WHICH A BEST TEST PATTERN PRINTED ON A  
RECORDING MEDIUM IS AUTOMATICALLY SELECTED

**APPEAL BRIEF TRANSMITTAL**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Attached hereto is our Brief on Appeal in the above-identified application.

Also attached hereto is our Check No. 191485 in the amount of Five Hundred Dollars (\$500.00) in payment of the Brief fee under 37 C.F.R. 41.20(b)(2). In the event of any underpayment or overpayment, please debit or credit our Deposit Account No. 15-0461 as needed in order to effect proper filing of this Brief.

Respectfully submitted,

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BRIEF ON APPEAL

Appeal from Group 2853

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**I. REAL PARTY IN INTEREST**

The real party in interest for this appeal and the present application is Brother Kogyo Kabushiki Kaisha, by way of an Assignment recorded in the U.S. Patent and Trademark Office beginning at Reel 014325, Frame 0361.

**II. STATEMENT OF RELATED APPEALS AND INTERFERENCES**

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

**III. STATUS OF CLAIMS**

Claims 1, 3-9, 13, 14, and 23 are on appeal.

Claims 1, 3-9, and 11-23 are pending.

Claims 11, 12, and 15-22 are allowed.

Claims 1, 3, 5, 6, and 23 are rejected.

Claim 4, 7-9, 13, and 14 recite allowable subject matter but are objected to for being dependent on a rejected base claim.

**IV. STATUS OF AMENDMENTS**

An Amendment After Final Rejection was filed on January 3, 2007, in reply to the Final Rejection mailed August 31, 2006. The Amendment After Final Rejection was entered and considered by the Examiner, as evidenced by the Advisory Action mailed January 19, 2007.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

A summary of the subject matter of the independent claims is given below with reference to the specification and drawings. Any reference to the specification and drawings below is only exemplary and should neither be construed to encompass every portion of the specification and drawings that supports the various claim features nor construed to limit the claimed subject matter beyond the claim language.

Independent claim 1 is directed to an ink jet printer (P1/L5-9), such as, for example, ink jet printer **4**, as part of multifunctional apparatus **1** (FIGS. 1 and 2). The ink jet printer of claim 1 includes a printing unit such as, for example, print mechanism section **10** (P9/L15 - P11/L9 and FIGS. 2 and 3). The printing unit (print mechanism section **10**) includes a carriage **23** and a print head **23P** in which a plurality of ink jet nozzles **23a-23d** are arranged in plural columns (P9/L25 - P10/L11 and FIG. 2). The print mechanism section **10** prints on a printing medium (e.g., a "sheet") while reciprocating the print head **23P** by the carriage **23** for go-printing and return-printing (P10/L12 - P11/L9).

The ink jet printer of claim 1 includes a sensor, such as, for example, optical medium sensor **27** (P10/L23-25, FIGS. 2 and 3). The sensor **27** is disposed on the carriage **23** and has a light-emitting portion **27a** for emitting light toward the printing medium and a light-receiving portion **27b** for receiving reflected light from the printing medium (P11/L1-9 and FIG. 3).

The ink jet printer of claim 1 also includes a test pattern printing control unit, for example, constituted by a CPU **60**, a ROM **61**, and a RAM **62**, that causes the printing unit to print a test pattern in which vertical ruled lines are arranged with a prescribed pitch (P14/L6-8, P15/L18 - P16/L4, Step S16 of FIG. 4, and FIGS. 3-6B). The ink jet printer of claim 1 includes a plural patterns printing instructing unit that may also constituted by the CPU **60**, the ROM **61**, and the RAM **62** (P14/L6-8, P15/L18 - P16/L16, Steps S15 and S16 of FIG. 4, and FIGS. 3-6B). The plural patterns printing instructing unit (e.g., CPU **60**, the ROM **61**, and the RAM **62**) causes the printing unit (print mechanism section **10**) to print a plurality of test patterns while changing a test pattern printing interval of the return-printing with respect to the go-printing in plural stages (P14/L6-8, P15/L18 - P16/L16, and FIGS. 3-6B).



The ink jet printer of claim 1 includes a best pattern detecting unit, for example, constituted by the CPU **60**, the ROM **61**, and the RAM **62** (P14/L6-8, P19/L2-P20/L12, and Steps S17-S19 and S23 of FIG. 4). The best pattern detecting unit scans in the printed test patterns with the sensor **27** and automatically selects a best test pattern from the scanned-in test patterns (P14/L6-8, P19/L2-P20/L12, Steps S17-S19 and S23 of FIG. 4, and FIG. 5).

The ink jet printer of claim 1 includes a best pattern printing instructing unit, for example, also constituted by the CPU **60**, the ROM **61**, and the RAM **62** (P14/L6-8, P20/L13-19, and Steps S26, S28, and S29 of FIG. 4). The best pattern printing instructing unit causes the printing unit (print mechanism section **10**) to print information indicating an image of the selected best test pattern on the printing medium (P17/L7-15 and Step S16 of FIG. 4). The best pattern printing instructing unit also causes the printing unit to reprint the selected best test pattern from the scanned-in test patterns on the printing medium at the test pattern printing interval that produces the selected best test pattern as information indicating the image of the selected best test pattern (P21/L20-24, Steps S26 and S29).

Independent claim 23 is also directed to an ink jet printer (P1/L5-9), such as, for example, ink jet printer **4**, as part of multifunctional apparatus **1** (FIGS. 1 and 2). The ink jet printer of claim 23 includes a printing unit such as, for example, print mechanism section **10** (P9/L15 - P11/L9 and FIGS. 2 and 3). The printing unit (print mechanism section **10**) includes a carriage **23** and a print head **23P** in which a plurality of ink jet nozzles **23a-23d** are arranged in plural columns (P9/L25 - P10/L11 and FIG. 2). The print mechanism section **10** prints on a printing medium while reciprocating the print head **23P** by the carriage **23** for go-printing and return-printing (P10/L12 - P11/L9).

The ink jet printer of claim 23 includes a sensor, such as, for example, optical medium sensor **27** (P10/L23-25 and FIGS. 2 and 3). The sensor **27** is disposed on the carriage **23** and has a light-emitting portion **27a** for emitting light toward the printing medium and a light-receiving portion **27b** for receiving reflected light from the printing medium (P11/L1-9 and FIG. 3).

The ink jet printer of claim 23 also includes a test pattern printing control unit, for example, constituted by a CPU **60**, a ROM **61**, and a RAM **62**, that causes the printing unit to

print a test pattern in which vertical ruled lines are arranged with a prescribed pitch (P14/L6-8, P15/L18 - P16/L4, Step S16 of FIG. 4, and FIGS. 3-6B). The ink jet printer of claim 23 includes a plural patterns printing instructing unit that may also constituted by the CPU 60, the ROM 61, and the RAM 62 (P14/L6-8, P15/L18 - P16/L16, Steps S15 and S16 of FIG. 4, and FIGS. 3-6B). The plural patterns printing instructing unit (e.g., CPU 60, the ROM 61, and the RAM 62) causes the printing unit (print mechanism section 10) to print a plurality of test patterns while changing a test pattern printing interval of the return-printing with respect to the go-printing in plural stages (P14/L6-8, P15/L18 - P16/L16, and FIGS. 3-6B).

The ink jet printer of claim 23 includes a best pattern detecting unit, for example, constituted by the CPU 60, the ROM 61, and the RAM 62 (P14/L6-8, P19/L2-P20/L12, Steps S17-S19 and S23 of FIG. 5). The best pattern detecting unit scans in the printed test patterns with the sensor 27 and automatically selects a best test pattern from the scanned-in test patterns (P14/L6-8, P19/L2-P20/L12, Steps S17-S19 and S23 of FIG. 4, and FIG. 5).

The ink jet printer of claim 23 includes a best pattern printing instructing unit, for example, also constituted by the CPU 60, the ROM 61, and the RAM 62 (P14/L6-8, P20/L13-19, and Steps S26, S28, and S29 of FIG. 4). The best pattern printing instructing unit causes the printing unit (print mechanism section 10) to print information indicating an image of the selected best test pattern on the printing medium, wherein the image printed on the printing medium includes a confirmation pattern that corresponds to the selected best test pattern and its number of shift dots (P21/L20-24 and Steps S26 and S29).

**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

The following grounds of rejection are presented for review:

1) Claims 1, 3, 5, 6, and 23 are rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,454,390 (Takahashi) in view of U.S. Patent No. 6,215,562 (Michel).

## VII. ARGUMENT

The Final Rejection fails to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) for claims 1, 3, 5, 6, and 23. In particular, the Final Rejection fails to establish that the skilled artisan would have been motivated to modify the device of Takahashi in view of the alleged teaching of Michel to arrive at the claimed invention.

### A. Requirements for a *prima facie* case of obviousness under 35 U.S.C. §103(a)

In order to establish a *prima facie* case of obviousness, three criteria must be met (MPEP §§ 2142, 2143). 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to the skilled artisan, to modify the reference or combine reference teachings. 2) There must be a reasonable expectation of success. 3) The prior art reference (or references when combined) must teach or suggest all of the claim limitations. The first two criteria must both be found in the prior art, and not based on Appellant' disclosure.

#### 1. Neither Takahashi nor Michel teaches or suggests all of the claim limitations as set forth in claims 1 and 23.

As acknowledged by the Final Rejection, Takahashi at least fails to disclose reprinting the selected best test pattern from the scanned-in test patterns on the printing medium, as recited in claim 1 and similarly recited in claim 23. Appellant notes that by reciting "the printing medium" the test pattern must be reprinted on the same printing medium on which it was originally printed.

Michel fails to make up for this deficiency of Takahashi. In particular, Michel discloses that every time a color patch and a brightness patch are selected by the user, a new Gray Balance page is reprinted with the selected color patch, not the best patch, as the middle patch 125 (C7/L3-6 and L39-40, and FIGS. 3A-3B). This reprinted Gray Balance page is different from the previously printed page. In this respect, Michel clearly distinguishes between the selected patch, which is simply one of the patches selected by the user to arrive at the best patch, and the best patch. Specifically, according to the method of Michel, a Gray Balance page is printed (FIG. 3A, step 310). Then, the user selects which of the patches is closest to the gray that surrounds all of the patches (C7/L1-2). Upon selection, a new Gray

Balance pages is printed with the selected patch as the middle patch (C7/L3-6 and FIG. 3A, Step 312). This process may be repeated (C7/L6-7). However, once the user has identified the patch which he/she believes is "the best" (FIG. 3A, Step 311 = YES), the patch is not reprinted (C7/L39-42). Instead, the printer is recalibrated based on the best patch (C7/L6-14 and FIG. 3B, Step 319 = YES). Thus, although Michel may disclose reprinting a selected patch (as relied on by the Advisory Action), Michel fails to disclose, teach, or suggest reprinting the selected patch once it has been determined to be best patch.

Furthermore, in order for the user to determine the selected patch, the Gray Balance page must be reprinted on a separate sheet each time. That is, in Michel, the selected test pattern is not printed on the same printing medium as required by claims 1 and 23. Rather, each time a new Gray balance page is reprinted, it is printed on a new sheet (C7/L3-6 and L39-40 and FIGS. 3A-3B).

Because both Takahashi and Michel fail to disclose reprinting the best patch on the same printing medium, claims 1 and 23 are patentable over the combination of Takahashi and Michel. Further, claims 3, 5, and 6 are patentable for at least the reasons that claim 1 is patentable, as well as for the additional features they recite.

**2. The Final Rejection has failed to identify a proper motivation for combining the alleged teachings of Takahashi and Michel**

The Final Rejection alleges that it would have been obvious to the skilled artisan to modify Takahashi by the alleged teaching of Michel so as to reprint the "selected test pattern...for the purpose of enabling errors to be readily detected and corrected by employing an iterative process with coarse and fine iterations" (Final Rejection, pp. 5 and 6). This alleged motivation is deficient for at least the following reasons.

First, even if there were motivation to make the alleged modification, the modification would not arrive at the inventions of claims 1 and 23. That is, even if the device of Takahashi was modified to print the selected test pattern, it would not reprint the best test pattern. As discussed above in detail, Michel clearly distinguishes between the selected test pattern and the best test pattern.

Second, assuming Michel teaches that reprinting the selected test pattern "enables errors to be readily detected and corrected by employing an iterative process with coarse and

fine iterations," as alleged by the Final Rejection, the skilled artisan would also recognize that in order to achieve such a benefit the selected test pattern must be reprinted on a separate sheet. According to the teachings of Michel, the iterative process is only achieved by reprinting each Gray Balance page with the selected patch as the middle patch (C7/L3-6 and Fig. 3A, Step 312), so that it may be evaluated by the user. Without evaluation of the pages there is no iterative process. Thus, were the skilled artisan motivated to modify the device of Takahashi to enable errors to be readily detected and corrected by employing an iterative process with coarse and fine iterations, the skilled artisan would also have been motivated to reprint the selected test patterns on separate sheets. Otherwise, based on the express teaching of Michel, it would not be possible to employ an iterative process with coarse and fine iterations.


Third, even if the device of Takahashi was modified to reprint the best test pattern on the same sheet, as alleged by the Final Rejection, such a modification would not provide any additional benefit to the device of Takahashi. Specifically, the device of Takahashi is perfectly capable of determining a best patch by printing the test patches only once (see, e.g., C26/L1-20). Simply printing an additional best test pattern on the same page would provide no additional benefit to the device of Takahashi and would in no way benefit the method by which the device of Takahashi determines the best printing registration.

Thus, for at least the above reasons, the skilled artisan would not have been motivated to modify the device of Takahashi by the alleged teachings of Michel. Accordingly, the Final Rejection has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) and the rejection should be reversed.

**VIII. CONCLUSION**

For at least the reasons discussed above, it is respectfully submitted that the rejections are in error and that the pending claims are in condition for allowance. For at least the above reasons, Appellants respectfully request this Honorable Board to reverse the rejections of claims 1, 3, 5, 6, and 23.

Respectfully submitted,



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**APPENDIX A - CLAIMS APPENDIX**

**CLAIMS INVOLVED IN THE APPEAL:**

1. An ink jet printer, comprising:

a printing unit having a carriage and a print head in which a plurality of ink jet nozzles are arranged in plural columns, the printing unit printing on a printing medium while reciprocating the print head by the carriage for go-printing and return-printing;

a sensor disposed on the carriage and having a light-emitting portion for emitting light toward the printing medium and a light-receiving portion for receiving reflected light from the printing medium;

a test pattern printing control unit that causes the printing unit to print a test pattern in which vertical ruled lines are arranged with a prescribed pitch;

a plural patterns printing instructing unit that causes the printing unit to print a plurality of test patterns while changing a test pattern printing interval of the return-printing with respect to the go-printing in plural stages;

a best pattern detecting unit for scanning-in the printed test patterns with the sensor and for automatically selecting a best test pattern from the scanned-in test patterns; and

a best pattern printing instructing unit that causes the printing unit to print information indicating an image of the selected best test pattern on the printing medium, wherein the best pattern printing instructing unit causes the printing unit to reprint the selected best test pattern from the scanned-in test patterns on the printing medium at the test pattern printing interval that produces the selected best test pattern as information indicating the image of the selected best test pattern.

2. (Canceled)

3. The ink jet printer according to claim 1, wherein the best pattern printing instructing unit causes the printing unit to print information indicating a test pattern printing



interval that produces the selected best test pattern as information indicating the image of the selected best test pattern.

4. The ink jet printer according to claim 1, wherein the best pattern detecting unit comprises:

a sum-of-deviations calculating unit for calculating, for each of the test patterns, a sum of density deviations of a number of vertical ruled lines with respect to a density center value of the vertical ruled lines; and

a pattern selecting unit for selecting the best test pattern from the scanned-in test patterns, the best test pattern having the minimum sum of density deviations calculated by the sum-of-deviations calculating unit.

5. The ink jet printer according to claim 1, wherein the sensor detects at least one of a front end portion, a rear end portion, and a width portion of the printing medium.

6. The ink jet printer according to claim 1, further comprising:

a detection result judging unit for judging whether a detection made by the best pattern detecting unit is appropriate; and

a re-detection executing unit that causes the printing unit to print the plurality of test patterns again while changing a printing condition and causes the sensor to scan the printed test patterns again when the detection result judging unit judges that the detection made by the best pattern detecting unit is not appropriate.

7. The ink jet printer according to claim 4, further comprising:

a detection result judging unit for judging whether a detection made by the best pattern detecting unit is appropriate; and

a re-detection executing unit that causes the printing unit to print the plurality of test patterns again while changing a printing condition and causes the sensor to scan the printed

test patterns again when the detection result judging unit judges that the detection made by the best pattern detecting unit is not appropriate.

8. The ink jet printer according to claim 7, wherein the detection result judging unit judges whether a difference between a maximum value and a minimum value among sum of density deviations of respective test patterns is not less than a predetermined value, and judges that the detection made by the best pattern detecting unit is appropriate when the difference is not less than the predetermined value.

9. The ink jet printer according to claim 6, wherein the re-detection executing unit causes the printing unit to print the plurality of test patterns while changing a number of printing times, and the printing unit conducts go-printing and return-printing for each line along a go/return direction a number of times equal to the changed printing times.

10. (Canceled)

11-12. (Allowed)

13. The ink jet printer according to claim 1, wherein each test pattern has a plurality of first regions and a plurality of second regions, each first region having both a plurality of dots that is printed by go-printing and a plurality of dots that is printed by return-printing, each second region having only a plurality of dots that is printed by one of go-printing and return-printing, a number of the sum of the dots per unit area of the first region being equal to a number of dots per unit area of the second region.

14. The ink jet printer according to claim 13, wherein the plurality of first regions and the plurality of second regions are disposed alternately on each test pattern.

15-22. (Allowed)

23. An ink jet printer, comprising:

a printing unit having a carriage and a print head in which a plurality of ink jet nozzles are arranged in plural columns, the printing unit printing on a printing medium while reciprocating the print head by the carriage for go-printing and return-printing;

a sensor disposed on the carriage and having a light-emitting portion for emitting light toward the printing medium and a light-receiving portion for receiving reflected light from the printing medium;

a test pattern printing control unit that causes the printing unit to print a test pattern in which vertical ruled lines are arranged with a prescribed pitch;

a plural patterns printing instructing unit that causes the printing unit to print a plurality of test patterns while changing a test pattern printing interval of the return-printing with respect to the go-printing in plural stages;

a best pattern detecting unit for scanning-in the printed test patterns with the sensor and for automatically selecting a best test pattern from the scanned-in test patterns; and

a best pattern printing instructing unit that causes the printing unit to print information indicating an image of the selected best test pattern on the printing medium, wherein the image printed on the printing medium includes a confirmation pattern that corresponds to the selected best test pattern and its number of shift dots.

**APPENDIX B - EVIDENCE APPENDIX**

NONE

**APPENDIX C - RELATED PROCEEDINGS APPENDIX**

NONE